Trend Study 6-1-01

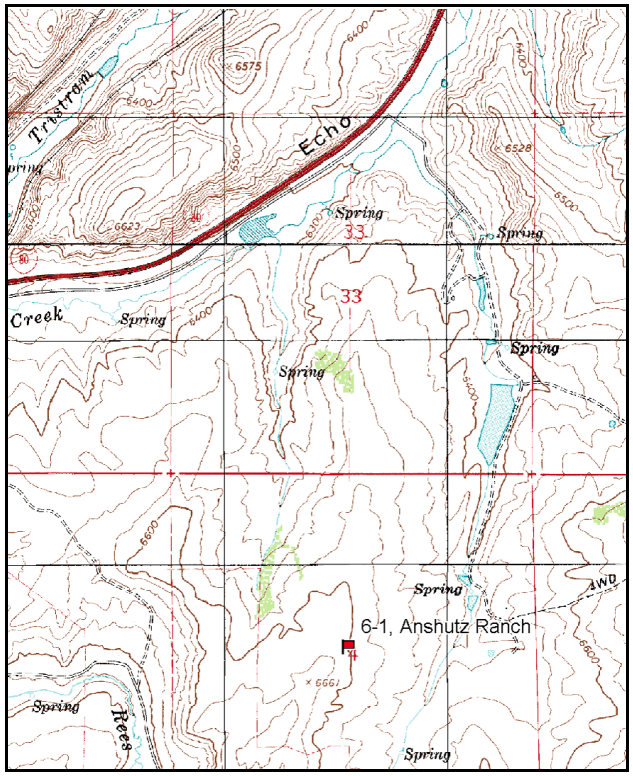
Study site name: Anshutz Ranch . Vegetation type: Low Sagebrush .

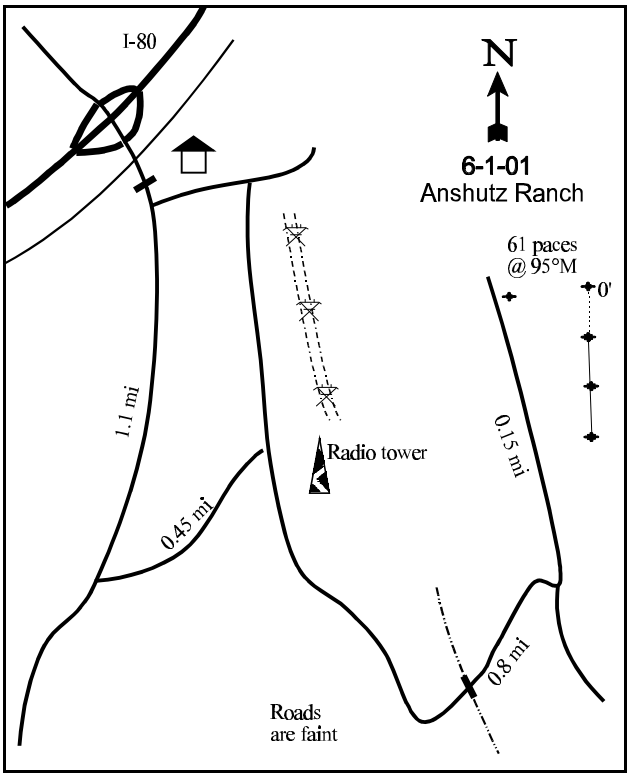
Compass bearing: frequency baseline 163 degrees magnetic.

Frequency belt placement: Line 1 (11 & 95ft), line 2 (34 & 71ft), line 3 (59ft).

LOCATION DESCRIPTION

Proceeding east on I-80 from Echo, leave I-80 at exit number 185 and proceed east to Anshutz Ranch headquarters. From the security guard house proceed 0.1 miles and turn left. Proceed 0.65 miles (passing ranch lumber and equipment yard and a gate)to a faint road to the left. Turn left, proceed 0.8 miles (go through gate) to a crossroad on a small ridge. Turn left(road not on quad and quite faint) and proceed 0.15 miles to a green steel stake on the right(east)side of the road. From stake, walk 51 paces at 95 degrees magnetic to the 0-foot of the baseline marked by browse tag #7949.





Map Name: Castle Rock

Diagrammatic Sketch

Township 4N , Range 7E , Section 4

UTM 4550593 N 486531 E

DISCUSSION

Trend Study No. 6-1

The Anshutz Ranch trend study is located at a moderately high elevation (6,640 feet) southeast of the Anshutz Ranch headquarters. Big game use of the study area is light to moderate and comes chiefly from elk. The area is also important for sage grouse. The land is privately owned and is utilized by sheep, cattle, and horses. Vegetatively, a number of range types are closely intermixed. In swales, grass and/or basin big sagebrush is often predominate. On gentle slopes and flat areas, mixed communities consist mostly of basin big sagebrush and low sagebrush, with Wyoming big sagebrush and possibly mountain big sagebrush occurring occasionally. On the more well-drained ridgetops, low sagebrush is the most common sagebrush. Scattered throughout this area is an abundance of stickyleaf low rabbitbrush and broom snakeweed. In a few places, these two increaser species have gained dominance. The entire area is very open with little protective cover and gently rolling topography. The actual study site slopes gently (5%) to the southeast with vegetation consisting of a mixture of basin big sagebrush and low sagebrush. Broom snakeweed and stickyleaf low rabbitbrush are abundant subdominants. Pellet group transect data taken along the baseline in 2001 estimated 3 deer, 48 elk, and 4 cow days use/acre (8 ddu/ha, 117 edu/ha, and 9 cdu/ha). Horse and sage grouse droppings were also sampled in the transect in 2001.

Soils are moderately deep with an estimated effective rooting depth of nearly 14 inches. The soil is classified as a clay loam, with a slightly alkaline soil reaction (7.6 pH). Percent organic matter is moderate at 2.9%. The soil has some variable-sized rock interspersed throughout the profile. Surface rock and pavement combine to provide 3% average cover in 1996 and 2001. Protective cover provided by vegetation, litter, and cryptogams is abundant. However, most of the vegetative cover comes from shrubs as herbaceous cover is low. Percent bare ground is moderate at almost 21% in 2001, with most of the bare soil being found in sagebrush interspaces. Some localized soil movement is apparent. Phosphorus is low at 5.9 ppm as values less than 10 ppm can be limiting to normal plant growth and development.

Browse composition is dominated by sagebrush, most notably low sagebrush, which contributes 62% and 63% of the total browse cover in 1996 and 2001. Basin big sagebrush, which occurs mostly in the swales where soils are deeper, provides an additional 21% and 18% of the browse cover in 1996 and 2001 respectively. Low sagebrush density is estimated at 9,580 plants/acre in 2001. Mature plants currently (‘01) make up 76% of the population, with an additional 22% of the population being classified as decadent. In addition, 44% (940 plants/acre) of the decadent plants sampled in 2001 were classified as dying. Percent decadence was much lower in 1996 and 2001 compared to the sampling periods of 1984 and 1990 when percent decadence was estimated at 50% and 55% respectively. Use on low sagebrush has been mostly light since 1984 when the majority of the population showed moderate use. Vigor has been generally good in all sampling years. Poor vigor has ranged from 4% in 1996 to 13% in 1990. Recruitment from young plants is low at 2% in 2001. Annual leader growth averaged less than 1 inch in 2001, but seed production was abundant.

Density estimates for basin big sagebrush have varied, with the population currently (‘01) estimated at 3,120 plants/acre. Density estimates in 1984 and 1990 were overestimated due to the small sample sized used during those readings. The much larger sample used in 1996 and 2001 provides more accurate density estimates for shrubs that have clumped and/or discontinuous population distributions. From 1984-1996, use was light to moderate, percent decadence ranged from 20-28%, and vigor was generally good, except in 1996, when poor vigor was estimated in 20% of the population. In 2001, basin big sagebrush displayed light use, good vigor, and moderately high decadency at 35%. In 1996 and 2001, the average number of young in the population was much lower than the number of dead within the population. Annual leader growth averaged just over 1 inch in 2001, and seed production was moderate.

Broom snakeweed and stickyleaf low rabbitbrush occur on the site. They appeared to be increasing in earlier readings (1984 and 1990). However, population density estimates have been much lower in 1996 and 2001. Both species appear to have stable densities as mature plants are the dominant age class in 2001. Snakeweed is more abundant where low sagebrush is dominate.

The herbaceous understory is fairly diverse, but not overly abundant. Composition has been quite variable through time, with perennials showing increased nested frequency values between 1984-1996. However in 2001, sum of nested frequency for all perennial herbaceous species decreased by 29% and cover decreased by half. These decreases, at least in part, are due to the extremely dry conditions during the spring and summer of 2001. Western wheatgrass and Sandberg bluegrass were the dominant perennial grasses in 2001. Western wheatgrass significantly increased in nested frequency, while Sandberg bluegrass increased but not significantly. Bottlebrush squirreltail was abundant in 1984 and 1990, but has steadily decreased since. Annual grasses are present, but not very abundant. In 2001, some utilization on grasses by cattle was noted, especially on plants within the shrub interspaces. Forbs were depleted in 2001 due to the drought. Desert and longleaf phlox were the most abundant perennials, with birdbeak being the most abundant annual species.

1984 APPARENT TREND ASSESSMENT

Soil trend appears stable because of the gentle terrain. If slopes were steeper, the expanse of bare soil in the shrub interspaces would probably allow gully and sheet erosion to occur at a much more rapid rate. Vegetative trend is unclear, but it appears that plant composition is declining in quality because of a shift from sagebrush to rabbitbrush and snakeweed.

1990 TREND ASSESSMENT

Big game use is not concentrated on the large expanse of sagebrush range sampled by this trend study. The big sagebrush, identified as *Artemisia tridentata tridentata*, displays light to moderate hedging. The low sagebrush (*A. arbuscula*) are lightly used. There is a high percentage of decadence in the low sagebrush population, but a large number of young sagebrush were also sampled. Total sagebrush canopy cover is 26%, with equal percentages for both species. Density slightly deceased, while the population continues to be 55% decadent. Broom snakeweed did not increase. The increases in grass frequency are a result of increases in the smaller bunch grasses, this would not include western wheatgrass or bluebunch wheatgrass. Utilization of grasses has been light this year, but overall there is limited herbaceous forage available. Perennial forbs are insignificant. Ground cover percentages are basically unchanged.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

1996 TREND ASSESSMENT

Big game use remains light for both elk and deer. Soil trend is improving with a decrease in percent bare ground from 23% to 16% since 1990. The browse trend is slightly improved because low sagebrush, which makes up 62% of the browse cover, has improved vigor and percent decadency has declined from 55% to 13%. The other key browse species, basin big sagebrush which accounts for an additional 21% of the browse cover, has also shown a significant reduction in the percentage of plants classified as decadent. The reduction in density for this species is mostly reflective of the much larger sampling design giving a greatly improved density estimate. Broom snakeweed and stickyleaf low rabbitbrush are showing no tendencies toward uncommon increases in their respective densities. The herbaceous understory trend is stable. Sum of nested

frequency for perennial grasses slightly increased, while sum of nested frequency for perennial forbs slightly declined. Cheatgrass, which is a concern on many of the winter ranges in the Northern Region, is moderately low providing only 11% of the herbaceous cover on the site.

TREND ASSESSMENT
soil - slightly up (4)
browse - slightly up (4)
herbaceous understory - stable (3)

2001 TREND ASSESSMENT

Soil trend is stable. Although bare ground slightly increased in percent cover, vegetation and litter remain abundant. Cryptogamic cover also increased in 2001 from 1% to nearly 7%. Trend for browse is stable. Low sagebrush and basin big sagebrush show increases in decadency and the number of decadent plants classified as dying. However, these increases are not unusually large. The number of young in the population for both species is low as well. Better precipitation in the future would help sagebrush reproduction on this site. Broom snakeweed and low rabbitbrush have stable densities at the present time. Trend for the herbaceous understory is slightly down. Sum of nested frequency for all perennial herbaceous species declined by 29% due to spring and summer drought in 2001. A positive aspect to the decrease in herbaceous species is that annual species also declined.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --
Herd unit 06 , Study no: 1

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
G	Agropyron smithii	$_{a}$72	$_{a}$71	$_{a}$72	$_{b}$111	25	25	25	43	1.80	.76
G	Agropyron spicatum	$_{a}$4	$_{a}$12	$_{b}$98	$_{a}$27	3	4	38	12	2.77	.38
G	Bromus japonicus (a)	-	-	2	3	-	-	1	2	.03	.03
G	Bromus tectorum (a)	-	-	$_{b}$78	$_{a}$25	-	-	31	13	2.00	.09
G	Carex spp.	-	-	-	2	-	-	-	1	-	.03
G	Oryzopsis hymenoides	3	-	8	-	1	-	4	-	.09	-
G	Poa fendleriana	$_{a}$-	$_{a}$-	$_{b}$26	$_{b}$33	-	-	11	13	.42	.53
G	Poa pratensis	$_{a}$3	$_{a}$8	$_{b}$27	$_{ab}$11	1	3	10	6	.75	.10
G	Poa secunda	$_{a}$76	$_{c}$230	$_{b}$154	$_{b}$182	33	87	55	71	2.01	2.61
G	Sitanion hystrix	$_{b}$118	$_{c}$162	$_{b}$127	$_{a}$32	53	69	56	13	2.63	.46
G	Stipa columbiana	5	23	10	19	3	10	7	8	.35	.16
G	Stipa comata	17	9	14	14	6	3	6	4	.25	.59
Total for Annual Grasses		0	0	80	28	0	0	32	15	2.03	0.12
Total for Perennial Grasses		298	515	536	431	125	201	212	171	11.11	5.64
Total for Grasses		298	515	616	459	125	201	244	186	13.15	5.76

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
F	Achillea millefolium	4	13	7	8	2	4	4	4	.07	.21
F	Agoseris glauca	4	3	-	6	2	1	-	2	-	.03
F	Allium acuminatum	$_{b}$44	$_{a}$-	$_{a}$-	$_{a}$-	27	-	-	-	-	-
F	Antennaria rosea	$_{b}$35	$_{c}$82	$_{a}$10	$_{ab}$16	15	35	6	7	.27	.10
F	Arabis spp.	$_{a}$-	$_{c}$22	$_{b}$9	$_{a}$-	-	11	5	-	.02	-
F	Astragalus convallarius	11	5	7	18	5	3	5	8	.12	.19
F	Astragalus utahensis	-	-	-	3	-	-	-	1	-	.03
F	Calochortus nuttallii	8	2	-	-	4	1	-	-	-	-
F	Cirsium undulatum	$_{a}$15	$_{b}$40	$_{a}$12	$_{a}$6	9	22	7	4	.13	.12
F	Collomia linearis (a)	-	-	$_{a}$-	$_{b}$24	-	-	-	10	-	.05
F	Collinsia parviflora (a)	-	-	$_{b}$43	$_{a}$13	-	-	23	6	.14	.03
F	Cordylanthus ramosus (a)	-	-	$_{a}$-	$_{b}$43	-	-	-	23	-	1.39
F	Epilobium brachycarpum (a)	-	-	-	3	-	-	-	1	-	.01
F	Erigeron pumilus	$_{ab}$47	$_{b}$74	$_{a}$31	$_{a}$16	22	35	14	10	.22	.12
F	Eriogonum umbellatum	-	1	3	5	-	1	2	3	.06	.21
F	Gayophytum ramosissimum (a)	-	-	-	4	-	-	-	2	-	.01
F	Holosteum umbellatum (a)	-	-	$_{b}$18	$_{a}$-	-	-	7	-	.03	-
F	Lepidium spp. (a)	-	-	-	7	-	-	-	4	-	.02
F	Linum lewisii	-	-	3	7	-	-	1	3	.03	.04
F	Machaeranthera canescens	-	9	-	-	-	3	-	-	-	.00
F	Phlox austromontana	$_{a}$-	$_{a}$2	$_{b}$60	$_{b}$46	-	2	27	20	1.36	.85
F	Phlox longifolia	$_{a}$40	$_{b}$164	$_{b}$158	$_{a}$39	21	62	63	15	1.16	.20
F	Polygonum douglasii (a)	-	-	$_{b}$85	$_{a}$27	-	-	34	11	1.08	.08
F	Ranunculus testiculatus (a)	-	-	$_{b}$14	$_{a}$5	-	-	7	2	.03	.01
F	Senecio multilobatus	-	-	-	2	-	-	-	1	-	.00
F	Sphaeralcea coccinea	1	2	-	-	1	2	-	-	-	-
F	Taraxacum officinale	$_{a}$-	$_{b}$9	$_{b}$8	$_{ab}$5	-	6	5	2	.05	.01
F	Tragopogon dubius	$_{a}$-	$_{a}$-	$_{b}$11	$_{ab}$3	-	-	5	1	.02	.00
F	Unknown forb-perennial	3	-	-	-	1	-	-	-	-	-
Total for Annual Forbs		0	0	160	126	0	0	71	59	1.29	1.61
Total for Perennial Forbs		212	428	319	180	109	188	144	81	3.54	2.16
Total for Forbs		212	428	479	306	109	188	215	140	4.84	3.77

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 06 , Study no: 1

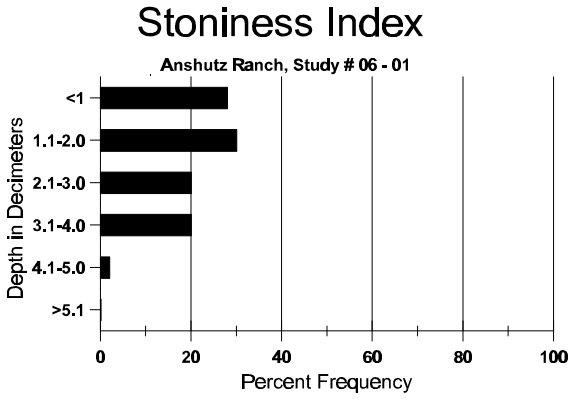
Type	Species	Strip Frequency '96	Strip Frequency '01	Average Cover % '96	Average Cover % '01
B	Artemisia arbuscula	90	86	22.02	20.63
B	Artemisia tridentata tridentata	53	61	7.44	6.64
B	Ceratoides lanata	3	4	-	.01
B	Chrysothamnus viscidiflorus viscidiflorus	94	89	5.53	4.28
B	Gutierrezia sarothrae	18	28	.28	1.20
B	Tetradymia canescens	9	8	.03	.03
Total for Browse		267	276	35.31	32.81

BASIC COVER --
Herd unit 06 , Study no: 1

Cover Type	Nested Frequency '96	Nested Frequency '01	Average Cover % '84	Average Cover % '90	Average Cover % '96	Average Cover % '01
Vegetation	348	331	2.25	12.25	49.98	45.91
Rock	152	109	2.25	1.25	1.98	1.67
Pavement	185	250	0	2.00	1.36	1.81
Litter	398	375	71.25	60.25	55.00	46.81
Cryptogams	72	134	.50	.50	.77	6.75
Bare Ground	255	269	23.75	23.75	16.36	20.99

SOIL ANALYSIS DATA --
Herd Unit 06, Study no: 01, Anshutz Ranch

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
13.9	63.3 (14.9)	7.6	40.7	26.0	33.3	2.9	5.9	83.2	.8



PELLET GROUP FREQUENCY --
Herd unit 06 , Study no: 1

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'96	'01	'01	'01
Rabbit	11	7	218	N/A
Horse	-	2	96	N/A
Grouse	-	1	9	N/A
Elk	8	7	618	48 (117)
Deer	6	2	44	3 (8)
Cattle	1	-	44	4 (9)

BROWSE CHARACTERISTICS --
Herd unit 06 , Study no: 1

AGE	YR	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Artemisia arbuscula																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	6	-	-	2	-	-	8	-	-	-	533			8
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
Y	84	2	1	-	-	-	-	-	-	-	3	-	-	-	200			3
	90	9	-	-	4	-	-	-	-	-	13	-	-	-	866			13
	96	21	-	-	-	-	-	-	-	-	20	-	1	-	420			21
	01	10	-	-	-	-	-	-	-	-	10	-	-	-	200			10
M	84	8	47	1	-	-	-	-	-	-	56	-	-	-	3733	12	17	56
	90	41	1	-	3	-	-	-	-	-	45	-	-	-	3000	9	15	45
	96	280	46	3	-	-	-	-	-	-	322	3	4	-	6580	9	20	329
	01	276	87	-	-	-	-	-	-	-	361	2	-	-	7260	10	20	363
D	84	6	51	2	-	-	-	-	-	-	53	-	6	-	3933			59
	90	69	-	-	1	-	-	-	-	-	52	1	-	17	4666			70
	96	23	26	2	1	-	-	-	-	-	41	-	-	11	1040			52
	01	85	19	-	2	-	-	-	-	-	59	-	-	47	2120			106
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	340			17
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	240			12

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	84%	03%	05%	+ 8%
'90	.78%	00%	13%	- 6%
'96	18%	01%	04%	+16%
'01	22%	00%	10%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	7866	Dec:	50%
	'90	8532		55%
	'96	8040		13%
	'01	9580		22%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata tridentata																		
S	84	37	-	-	-	-	-	-	-	-	37	-	-	-	2466			37
	90	3	-	-	1	-	-	2	-	-	5	-	1	-	400			6
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	64	6	-	-	-	-	-	-	-	69	-	1	-	4666			70
	90	29	10	-	10	-	-	-	-	-	48	1	-	-	3266			49
	96	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	01	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
M	84	11	20	2	-	-	-	-	-	-	33	-	-	-	2200	27	35	33
	90	16	2	2	1	-	-	-	-	-	20	1	-	-	1400	28	29	21
	96	35	39	4	-	-	-	-	-	-	68	1	9	-	1560	29	34	78
	01	88	6	-	-	-	-	-	-	-	94	-	-	-	1880	29	38	94
D	84	1	23	2	-	-	-	-	-	-	24	-	2	-	1733			26
	90	19	8	-	-	-	-	-	-	-	22	-	2	3	1800			27
	96	6	15	2	-	-	-	-	-	-	10	-	12	1	460			23
	01	51	4	-	-	-	-	-	-	-	49	-	-	6	1100			55
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	460			23
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	480			24

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	38%	03%	02%	-25%
'90	21%	02%	05%	-66%
'96	49%	05%	20%	+29%
'01	06%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	8599	Dec:		20%
'90	6466			28%
'96	2200			21%
'01	3120			35%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Ceratoides lanata																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66	7	3	1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	1	-	1	-	-	-	-	-	2	-	-	-	40	7	8	2
	01	4	2	-	-	-	-	-	-	-	6	-	-	-	120	6	9	6
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	1	-	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	33%	00%	00%	+57%
'01	43%	00%	14%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	66	Dec:		0%
'90	0			0%
'96	60			0%
'01	140			14%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	01	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	20	-	-	5	-	-	2	-	-	26	-	1	-	1800			27
	96	92	-	-	5	-	-	-	-	-	96	-	1	-	1940			97
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	84	115	-	-	-	-	-	-	-	-	115	-	-	-	7666	9	11	115
	90	64	4	-	8	-	-	3	-	-	68	-	11	-	5266	9	13	79
	96	286	4	-	16	-	-	-	-	-	306	-	-	-	6120	8	12	306
	01	328	-	-	6	-	-	4	-	-	334	4	-	-	6760	7	11	338
D	84	127	-	-	-	-	-	-	-	-	123	-	4	-	8466			127
	90	95	-	-	2	-	-	23	-	-	69	-	9	42	8000			120
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	26	-	-	-	-	-	-	-	-	22	-	-	4	520			26
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	02%	- 7%
'90	02%	00%	28%	-46%
'96	.98%	00%	.24%	- 9%
'01	00%	00%	01%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	16132	Dec:		52%
'90	15066			53%
'96	8100			0%
'01	7340			7%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	1	-	-	-	-	-	1	-	-	-	66			1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	14	-	-	-	-	-	1	-	-	14	1	-	-	1000			15
	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	84	123	-	-	-	-	-	-	-	-	123	-	-	-	8200	7	6	123
	90	99	-	-	-	-	-	1	-	-	93	6	1	-	6666	5	7	100
	96	41	-	-	-	-	-	-	-	-	41	-	-	-	820	5	6	41
	01	76	3	-	-	-	-	1	-	-	70	10	-	-	1600	6	11	80
D	84	12	-	-	-	-	-	-	-	-	12	-	-	-	800			12
	90	12	-	-	-	-	-	-	-	-	10	-	-	2	800			12
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	- 6%
'90	00%	00%	02%	-89%
'96	00%	00%	00%	+44%
'01	04%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	9000	Dec:	9%
	'90	8466		9%
	'96	900		0%
	'01	1620		0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Tetradymia canescens																		
Y	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	2	-	-	1	-	-	-	-	-	3	-	-	-	60			3
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66	8	3	1
	90	-	1	-	-	-	-	-	-	-	1	-	-	-	66	4	5	1
	96	3	1	4	-	-	-	-	-	-	8	-	-	-	160	7	13	8
	01	6	-	-	-	-	-	-	-	-	6	-	-	-	120	6	12	6
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	3	-	-	-	-	-	-	-	-	2	-	-	1	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	-50%
'90	100%	00%	00%	+73%
'96	08%	33%	00%	-25%
'01	00%	00%	11%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	132	Dec:	0%
	'90	66		0%
	'96	240		8%
	'01	180		33%